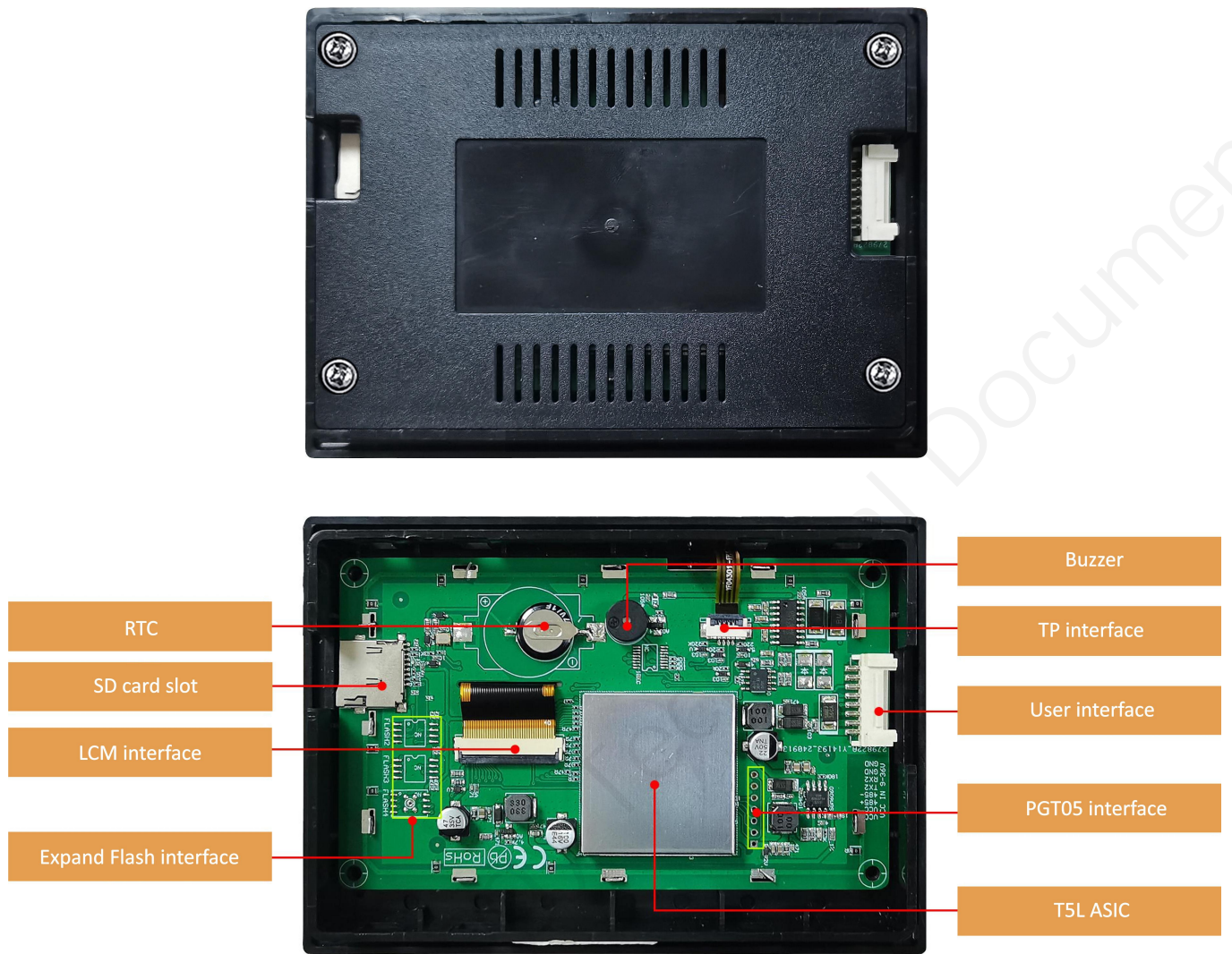Professional, Creditable, Successful

DMG48270C043_15WTR

Features:

- **Powered by T5L0 ASIC, running DGUS II HMI platform, commercial-grade smart LCM.**

- **4.3 inch, 480*272 resolution, TV-TN-TFT LCD.**

- **Reliable resistive touch panel.**

- **8MB memory, With enclosure.**

1. Hardware and interface

1.1 Hardware interface diagram

RTC	Buzzer
SD card slot	TP interface
LCM interface	User interface
Expand Flash interface	PGT05 interface
	T5L ASIC

Hardware interface diagram

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1.2 Hardware and interface description

No.	Item	Description
1	T5L0 ASIC	DWIN independently developed, mass production in 2020. Dual 8051 cores, GUI and application run on separate 8051 cores.
2	User interface	8Pin_2.0mm socket for power supply and serial communication.
3	Flash	8MBytes NOR Flash for storing UI files like fonts, images, music, with over 100,000 erase/write cycles.
4	Expand Flash pads	Expanding FLASH requires replacing 8MBytes NOR Flash with 16MBytes NOR Flash before proceeding with the expansion. It can support up to 64MB (4x16MB NOR Flash) or 48MB+512MB (3x16MB NOR Flash + 512MB NAND Flash).
5	Buzzer	3V passive buzzer.
6	RTC	Super-capacitor powered, accuracy: ±20ppm @25℃, maintains operation for 7 days after power-off. Reserved button cell power supply compatible circuit.
7	SD card slot	For DGUS project file downloads (UI, CFG files, kernel, etc.), 4 Mb/s rate.
8	PGT05 interface	For programming DGUS firmware.

2. Specification parameters

2.1 Display parameters

LCD Type	TV-TN, TFT LCD.
Viewing Angle	TV viewing angle, 70°/70°/40°/30° (L/R/U/D).
Resolution	480×272 (support 0°/90°/180°/270°)
Active Area (AA)	95.00mm (W)×53.90mm (H)
Viewing Area (VA)	95.00mm (W)×53.90mm (H)
Backlight	LED
Backlight Service Life	>10000 hours
Brightness	250nit
Brightness Control	100-level brightness adjustment (Flickering may occur at 1%-30% of max brightness; not recommended for use in this range)
Note: Use dynamic screen saver to prevent afterimages from prolonged fixed page display.	

2.2 Touch parameters

Type	RTP (Resistive touch panel).
Structure	ITO film + ITO glass.
Light Transmittance	78%±3%

2.3 Serial interface parameters

Mode	UART2: RS232 UART4: RS485 (Only available after OS configuration)				
Voltage Level (RXD, TXD)	Test Condition	Min	Typ	Max	Unit
	Output 1	-	-5.0	-3.0	V
	Output 0	3.0	5.0	-	V
	Input 1	-15.0	-5.0	-	V
	Input 0	-	5.0	15.0	V
Baud Rate	3150~3225600bps, typical value of 115200bps.				
Voltage Level (V_AB)	Test Condition	Min	Typ	Max	Unit
	Output 1	2.5	5.0	-	V
	Output 0	-	-5.0	-2.5	V
	Input 1	0	2.5	-	V
	Input 0	-	-2.5	-0.2	V
Baud Rate	3150~921600bps, typical value of 115200bps.				
Data Format	UART2: N81 UART4: N81/E81/O81/N82 ,4 modes (OS configuration)				
Interface Cable	8Pin_2.0mm				

2.4 Electrical specifications

Rated Power	<5W	
Operating Voltage	9-36V, typical value of 12V.	
Operating Current	109mA	VCC=12V, max backlight.
	50mA	VCC=12V, backlight off.
Recommended power supply: 12V 1A DC.		

2.5 Operating environment

Operating Temperature	-20℃ to 70℃ (12V @ 60% RH)
Storage Temperature	-30℃ to 80℃
Anti-UV	None
Conformal Coating	None
Operating Humidity	10%-90%RH, typical value of 60% RH.

3. Reliability test

3.1 Electrostatic discharge test

Test temperature: 25°C. Test humidity: 50%RH.

Test process: Place the product on the test bench fixture (approximately 15cm in height), and perform contact and air discharge tests on the smart LCM. Observe if any freezing, black or white screen, flickering, or rebooting occurs during the test.

Test conclusion: The product's ESD performance meets GB/T 17626.2 Class B standards.

Discharge Type	Discharge Value	Result
Air discharge	±4KV	Normal operation

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4. Packaging & dimensions

Form Factor	140.00mm (W)×98.00mm (H) ×22.10mm (T)				
Net Weight	185g				
Packaging Standards					
Model	**Dimensions**	**Layer**	**Quantity/Layer**	**Quantity(Pcs)**	
Carton1：	220mm(L)×160mm(W)×47mm (H)	1	1	1	
Carton2：	250mm(L)×200mm(W)×80mm (H)	1	2	2	
Carton3：	320mm(L)×270mm(W)×80mm (H)	2	2	4	
Carton4：	450mm(L)×350mm(W)×300mm (H)	2	10	20	
Carton5：	600mm(L)×450mm(W)×300mm (H)	2	17	34	
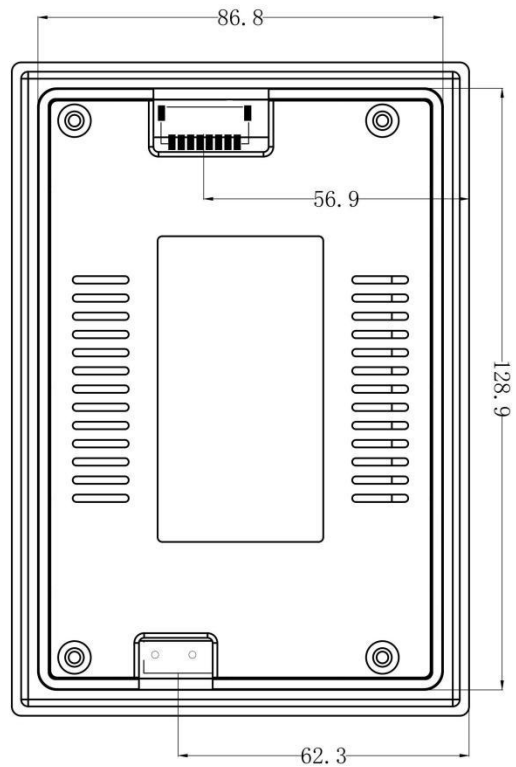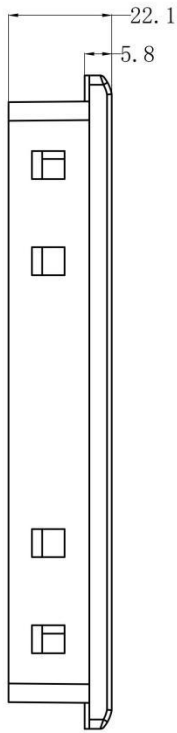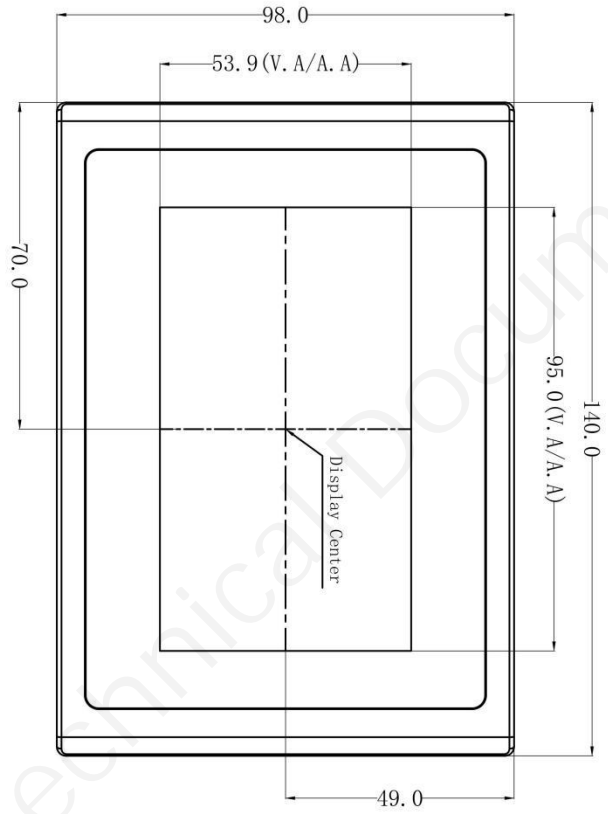
Definition	Pin#	Type	Description
VCC	1,2	P	Power Input
485+	3	A	485+
485-	4	B	485-
TX2	5	O	UART2 Output
RX2	6	I	UART2 Input
GND	7,8	P	GND

22.1

5.8

98.0

53.9 (V.A/A.A)

70.0

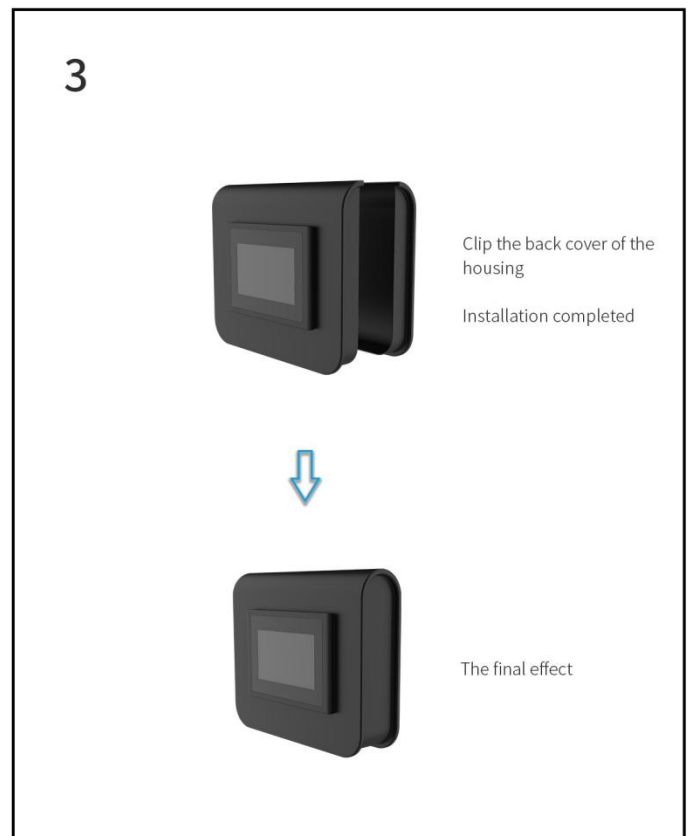95.0 (V.A/A.A)

140.0

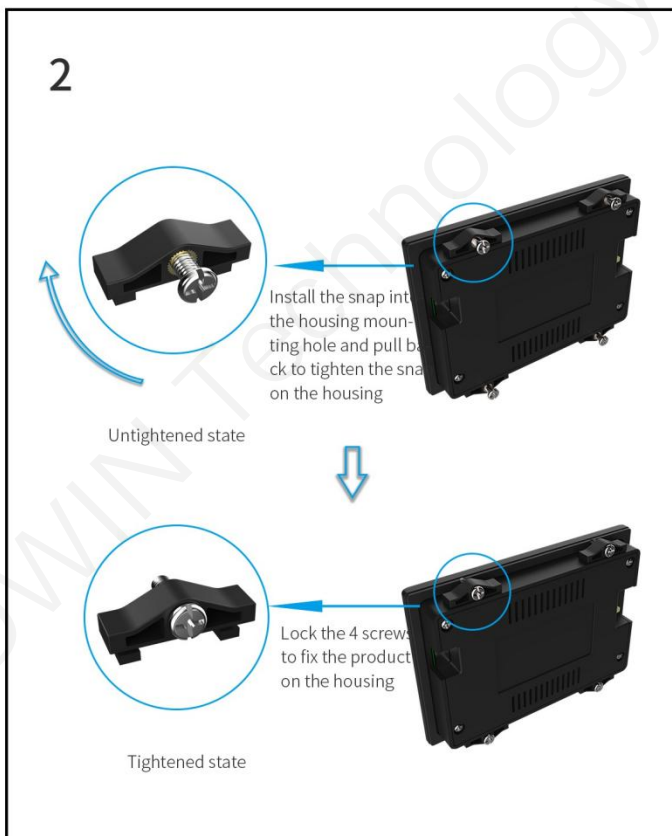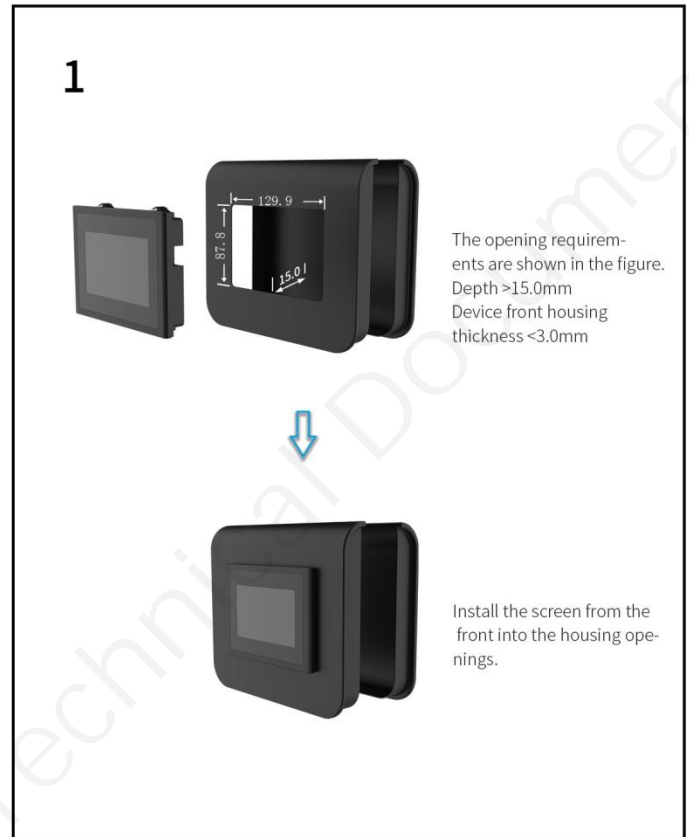Display Center

49.0

86.8

56.9

128.9

62.3
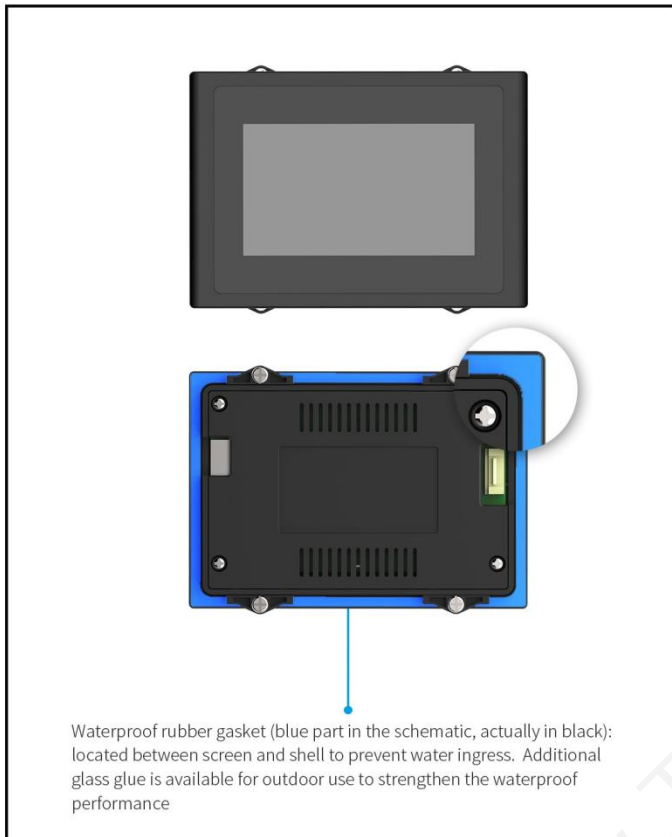
1. Location hole is used as position reference.
2. Unmarked Tolerance is +/-0.3mm
Note: Active area is marked in Dash lines

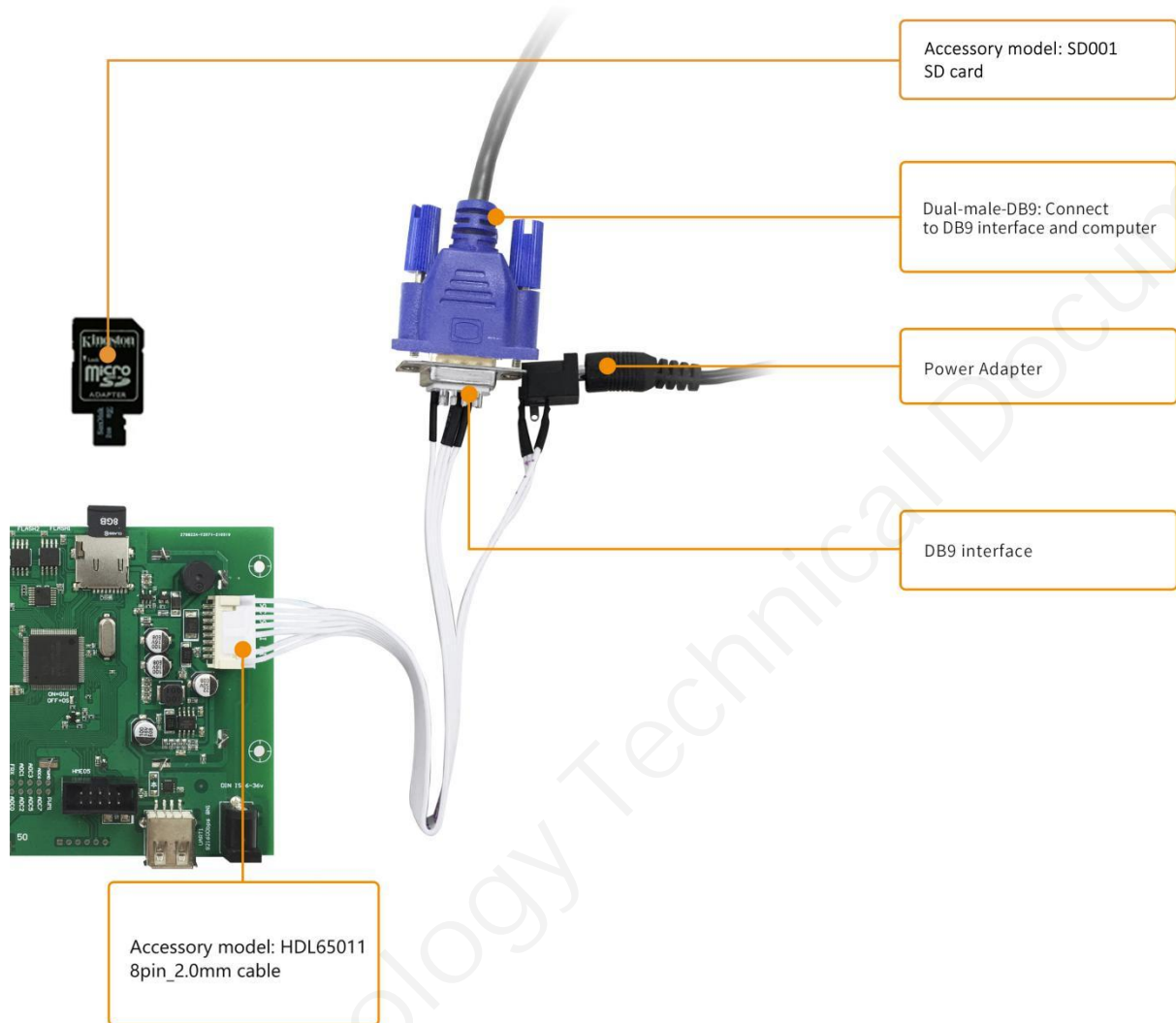|					
Model	DMG48270C043-15WTR				
Drawing	A 4	Drawn	G.Y	Date	2023.01.03
Scale	1:1	Review	Date	Date	
Unit	MM	Approval	Date		

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Installation Schematic

Waterproof rubber gasket (blue part in the schematic, actually in black): located between screen and shell to prevent water ingress. Additional glass glue is available for outdoor use to strengthen the waterproof performance

1

The opening requirements are shown in the figure.
Depth >15.0mm
Device front housing thickness <3.0mm

129.9
87.8
15.0

Install the screen from the front into the housing openings.

2

Install the snap int the housing mounting hole and pull back to tighten the sna on the housing

Untightened state

Lock the 4 screws to fix the product on the housing

Tightened state

3

Clip the back cover of the housing

Installation completed

The final effect

5. Debug tools

It is recommended for new users of DWIN smart LCMs to purchase official accessories. For more details, please refer to customer service center.

Accessory model: SD001
SD card

Dual-male-DB9: Connect to DB9 interface and computer

Power Adapter

DB9 interface

Accessory model: HDL65011
8pin_2.0mm cable

6. T5L series IC features

(1) Mature and stable 8051 core which is the most widely used with the maximum operating frequency of T5L is up to 250MHz, 1T(single instruction cycle)high speed operation.

(2) Separate GUI CPU Core running DGUS II System:

● High-speed display memory, 2.4GB/S bandwidth.

● 2D hardware acceleration, the decompression speed of JPEG is up to 200fps@1280*800 and the UI with animation and icons as its main feature is extremely cool and smooth.

● Images and icons stored in JPEG format. Adopt Low-cost 16Mbytes SPI Flash.

● Support CTP or RTP with adjustable sensitivity and maximum 400 Hz touch frequency.

● 1-way 15bit 32Ksps PWM digital power amplifier driver loudspeaker, save power amplifier cost and achieve high signal-to-noise ratio and sound quality restoration.

● 128Kbytes variable storage space for exchanging data with OS CPU Core and memory.

● Support DGUS development and simulation on PC. Support background remote upgrade.

(3) Separate CPU (OS CPU) core runs user 8051 code or DWIN OS system and user CPU is omitted in practical application:

● Standard 8051 architecture and instruction set, 64Kbytes code space, 32Kbytes on-chip RAM.

● 64 bit integer mathematical operation unit (MDU), including 64 bit MAC and 64 bit divider.

● 28 IOs, 4-channel UARTs, 1-channel CAN, up to 8-channel 12-bit A/Ds and 2-channle 16-bit PWM of adjustable resolution.

● Support IAP on-line simulation and debugging with unlimited number of breakpoints.

● Upgrade code online through DGUS system.

(4) 1Mbytes on-chip Flash with DWIN patent encryption technology ensure code and data security.

(5) Operating temperature ranges from -40°C to +85°C(IC operating temperature customizable from -55°C to 105°C).

DWIN encourages users to design your own customized product based on T5L

7. Revision records

Rev	Revise Date	Content	Editor
00	2024-09-11	First Edition	Xu Ying
01	2024-12-11	Change RTC	Xu Ying

Please contact us if you have any questions about the use of this document or our products, or if you would like to know the latest information about our products:

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Thank you all for continuous support of DWIN, and your approval is the driving force of our progress!

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